

WELLHEAD PROTECTION AREA (WHPA) DELINEATION GUIDANCE FOR NEW WELLS



As part of the Wellhead Protection program in DHEC's Bureau of Water, we seek to prevent wells from becoming contaminated by identifying areas of concern with regard to pollution and potential pollution sources. With the passage of amendments to the federal Safe Drinking Water Act, the Department has developed a source water protection plan, which will address both surface and groundwater sources. This guidance relates to delineating protection areas for all new groundwater sources permitted in accordance with R.61-58.1(E)(2)(i).

Simplified approach. The attached map delineates Wellhead Protection Area (WHPA) zones along with the four (4) charts that should be used to determine a well's WHPA. The zones are as follows:

1. Piedmont Regions 1 and 2 – Zones 1 and 2
2. Coastal Plain Sand Aquifers – Zone 3
3. Coastal Plain Limestone Aquifer – Zone 4

Each of the four zones has a corresponding table and equivalent graph. The graphs are a convenient way for applicants to identify the WHPA radius based on the proposed pumping rate. Data for the tables and graphs were generated using two methods. Data for zones 1 and 2 are based on volumetric formulas in accordance with the Department's Wellhead Protection Program Guide, dated November 1997 (i.e., fixed radius method). Data for zones 3 and 4 are based on wellhead protection computer models.

To delineate the proposed well's WHPA you should first determine in which zone the well is to be located. Once determined, you should proceed to the appropriate chart and use the estimated well pumping rate to determine the WHPA radius.

Note that once the WHPA has been determined then a complete inventory must be taken within the area and submitted to DHEC with the project application.

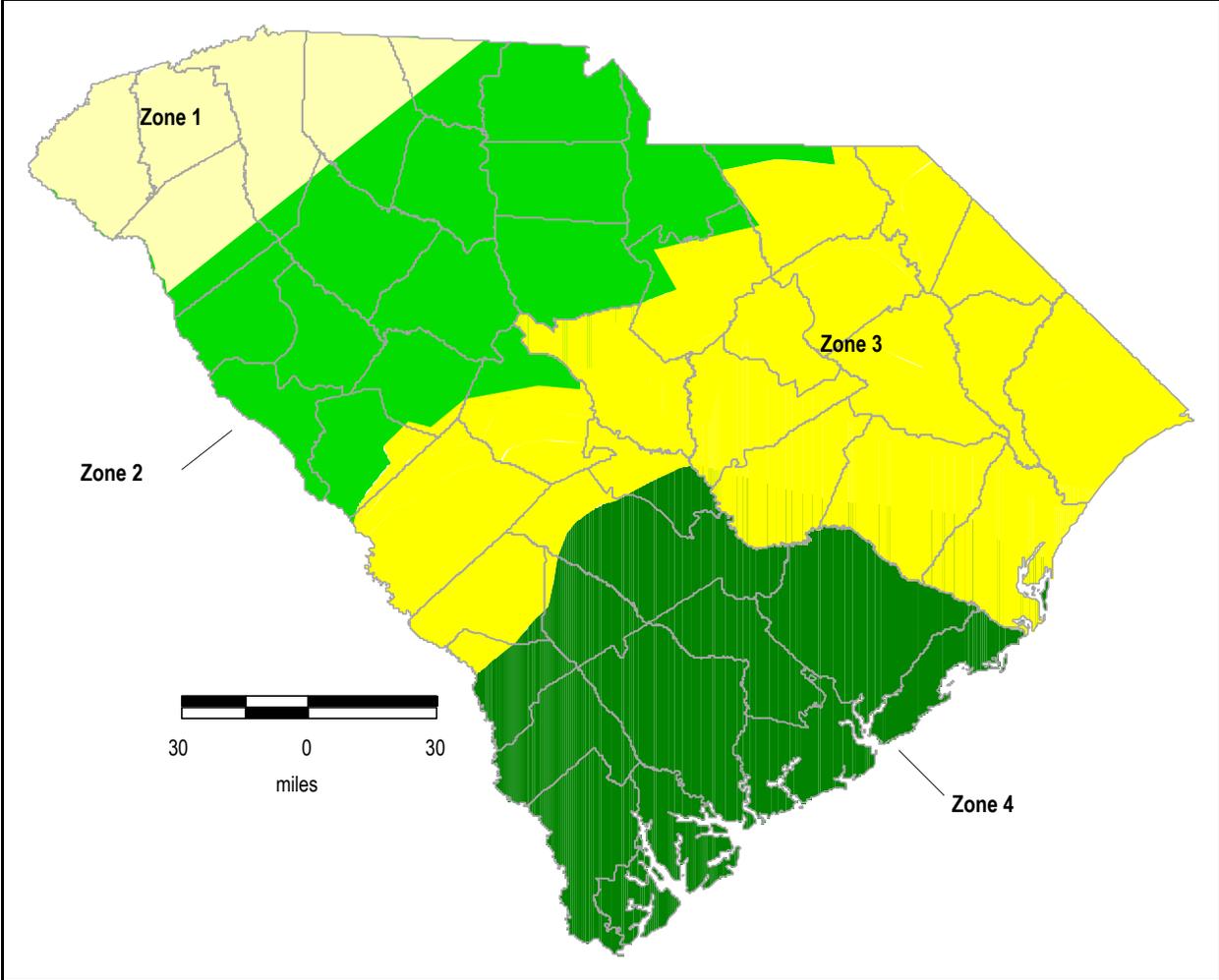
Alternative approach. Permit applicants may wish to use other models to determine the wellhead protection area. Please be informed that the Department will critique the model selected and concur with it if it is an appropriate tool.

Next step. Once a WHPA is established, state regulation 61-58 requires that permit applicants locate all real or potential sources of pollution. DHEC requests that this information be provided on *USGS topo maps* or equivalent so we can transfer the information to our GIS data base. A sample guide to develop an inventory for an area is attached.

Pollution-free radius. This approach doesn't change the need for a 100-foot pollution-free radius as described in 61-58.2.B(3), *Site Considerations*. The project submittal would indicate this as a separate issue, like on the site plan sheet.

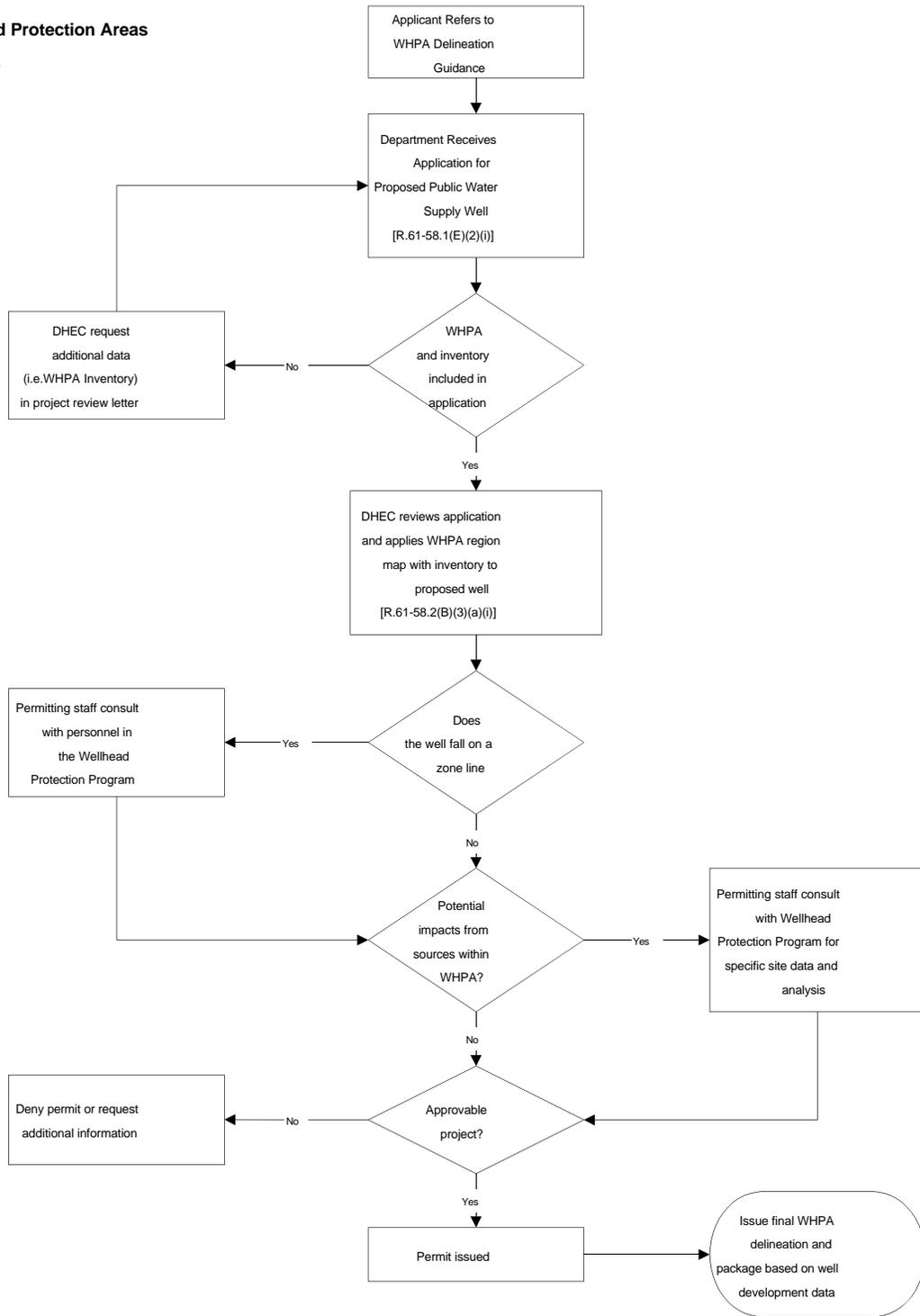
If there are any questions on our permitting process, please contact Shawn Clarke, P.E., Manager of the Department's Water Supply and Recreational Waters Permitting Section at (803) 898-3544. A flow chart on our permitting process regarding WHPA issues is attached.

WHPA Zones



Permitting Process

ID of Wellhead Protection Areas for New Wells



Wellhead Protection Inventory Guide

Public Water System/Area _____

Survey Date _____

Survey Conducted By _____

Landowner _____

Address _____

City _____ Zip Code _____

County _____

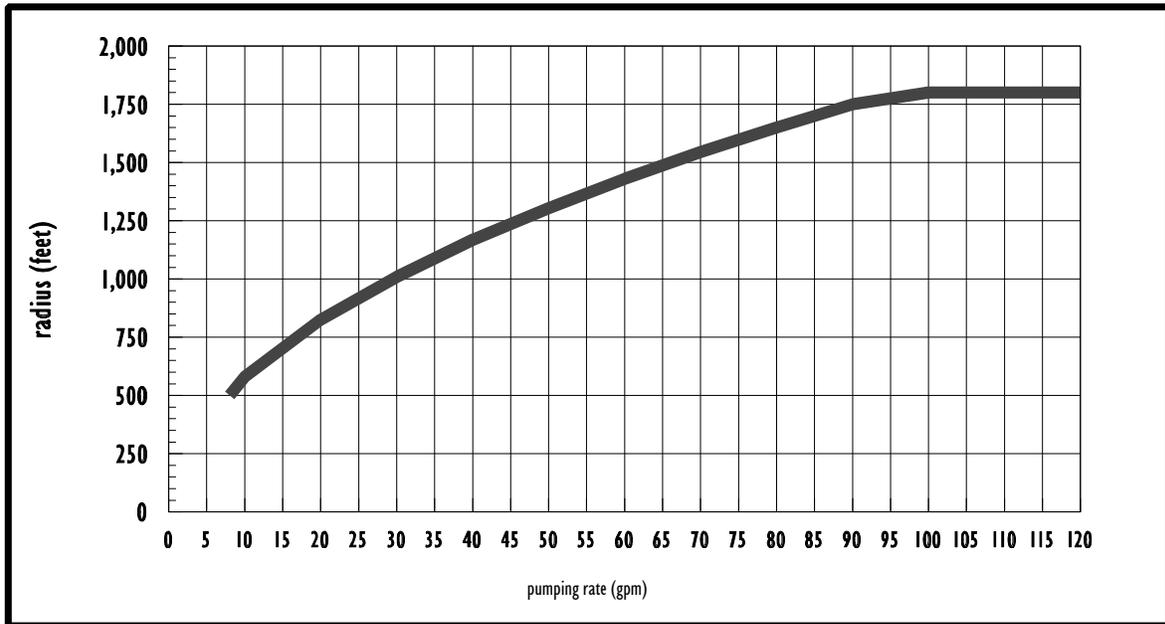
Type of Location _____

| Contamination Source Inventory | | | |
|--|---|--|---|
| Commercial/Industrial | # | Commercial/Industrial | # |
| Automotive | | Slaughter Houses | |
| Gas Stations | | Feed Lots/Manure Piles | |
| Service Stations | | Graveyards/Funeral Services | |
| Body Shops | | Hardware/Lumber/Parts Stores | |
| Repair | | Home Manufacturing | |
| Rust Proofers | | Junk and Salvage Yards | |
| Painting | | Machine Shops, Metal Platers, Heat Transfers, Smelters, Annealers, Descalers | |
| Auto Washes | | Mining Operations/Gravel Pits | |
| Auto Chemical Suppliers or Retailers | | Medical/Vet Offices | |
| Boat Services/Repair/Refinishing | | Nuclear Power Plant | |
| Airport Maintenance or Fueling Operations | | Photo Processing/Printing | |
| Cement, Asphalt, Tar, Coal Companies | | Plastics/Synthetics Producers | |
| Chemical/Petroleum Processing/Storage | | Railroad Yards | |
| Chemical Manufacturers/Recyclers | | Research Labs | |
| Conventional Power Plant | | Small Engine Repair Shops | |
| Dry Cleaners/Laundromats | | Specialty Chemical Company | |
| Electrical/Electronic Manufacturing | | Stormwater Impoundment Sites | |
| Fuel/Oil | | Truck/Fleet/Bus Terminals | |
| Distributors | | Wood Preserving/Treating | |
| Pipelines | | Wood/Pulp/Paper Processing and Mills | |
| Furniture Refinishers/Manufacture/Repair | | Other | |
| Heating Oil Storage (commercial on-site use) | | | |
| Food Processors | | | |
| Meat Packers | | | |

Contamination Source Inventory

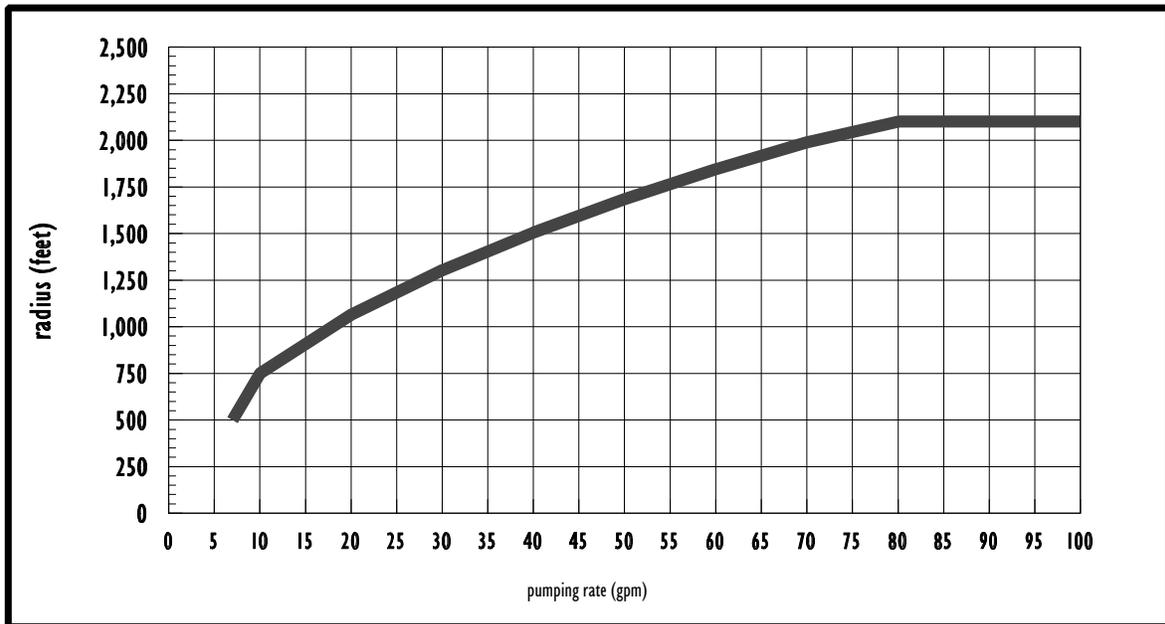
| Agricultural/Rural | # | Miscellaneous | # |
|--|----------|-------------------------------------|----------|
| Auction Lots | | Above-Ground Storage Tanks | |
| Boarding Stables | | Construction/Demolition Areas | |
| Confined Animal Feeding Operations | | Historic Gas Stations | |
| Crops | | Historic Waste Dumps/Landfills | |
| Irrigated | | Injection Wells/Dry Wells/Sumps | |
| Non-Irrigated | | Military Installations | |
| Farm Machinery Repair | | Underground Storage Tanks | |
| Homesteads | | Confirmed Leaking Tanks | |
| Machine Shops | | Out of Service | |
| Single Family Septic Systems | | Non-Regulated Tanks | |
| Lagoons/Liquid Wastes | | Not Upgraded or Registered Tanks | |
| Pesticide/Fertilizer/Petroleum Storage, Handling Mixing, and Cleaning Areas | | Upgraded and/or Registered-- Active | |
| Other | | Wells | |
| Residential/Municipal | # | Other | |
| Drinking Water Treatment Plants | | | |
| Golf Courses | | | |
| Landfills/Dumps | | | |
| Septic Systems (High Density>1/Acre) | | | |
| Utility Stations (Maintenance Areas) | | | |
| Waste Transfer/Recycling Stations | | | |
| Wastewater Treatment Plants/Collection Stations | | | |
| Other | | | |
| | | | |
| | | | |
| | | | |
| | | | |

WHPA Zone 1



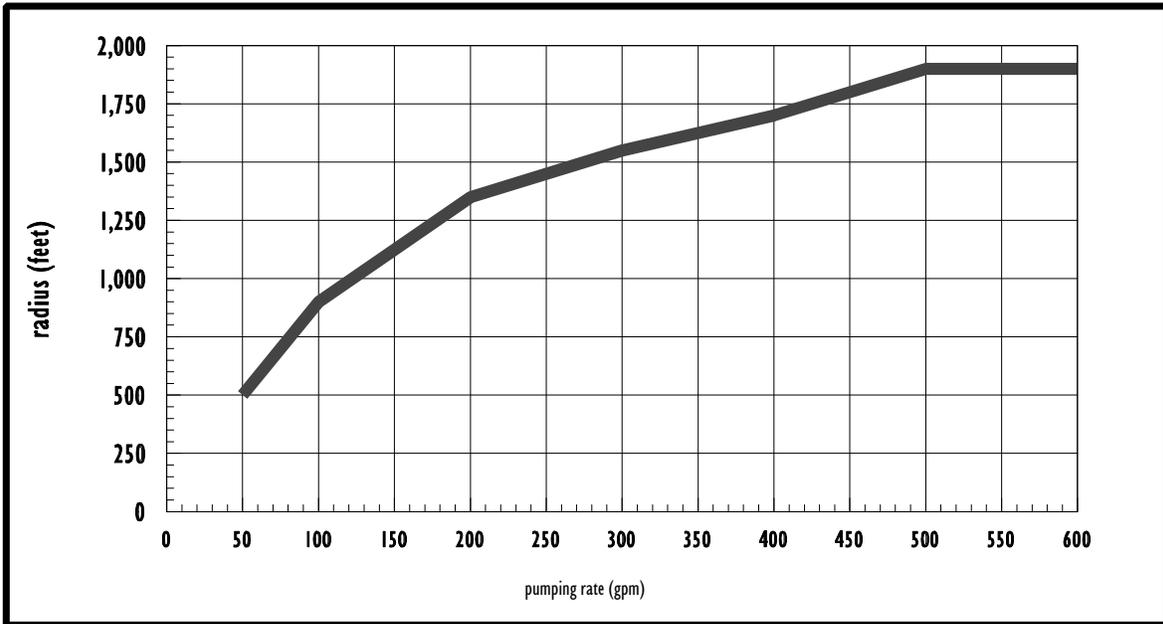
WHPA: minimum = 500 ft., maximum = 1800 ft.

WHPA Zone 2



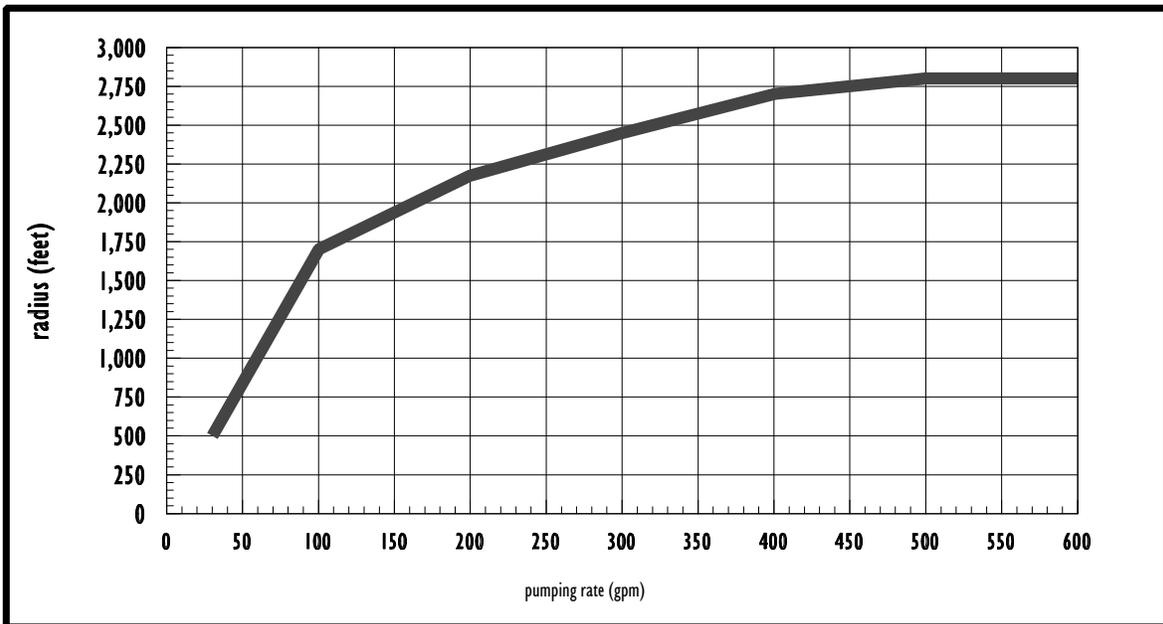
WHPA: minimum = 500 ft., maximum = 2100 ft.

WHPA Zone 3



WHPA: minimum = 500 ft., maximum = 1900 ft.

WHPA Zone 4



WHPA: minimum = 500 ft., maximum = 2800 ft.